Irreducible Aspects of Embodiment: Situating Scientist and Subject

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Abstract: Feminist philosophers of science have long discussed the important of taking situatedness into account in scientific practices in order to avoid erasing important aspects of lived experience. Through the example of Gillian Einstein's *situated neuroscience* (2012), I will add support to Gallagher's claims that intertheoretic reduction is problematic and provide reason to think pluralistic methodologies are explanatorily and ethically preferable.

Keywords: feminist philosophy of science; neurofeminism; situatedness; reduction; embodied cognition

Concerns about irreducibility and the relationships between gender, embodiment, and experience have been raised by feminist phenomenologists and philosophers of science in arguing that the objectification of nature in the hard sciences, as described by Gallagher (2019), is neither truly objective nor good scientific practice (see Harding 1991, Longino 1990). Feminist scientists and philosophers of science have also long discussed the importance of taking situatedness into account in order to 'reveal or prevent the disappearing of the experience and activities of women and/or to prevent the disappearing of gender' (Longino 1994: 50). Recent work in neurofeminism demonstrates the ongoing problems encountered in scientific explanations that attempt to cash out gender differences in terms of sexed brains or functions (Fine 2011). Considerations such as these add a compelling ethical dimension to Gallagher's (2019) invitation to re-envision the concept of nature as specified by what he calls 'science in its

classic form.'

While Gallagher's concern stems from commitments to a non-reductionist phenomenological program, the call for a non-reductionist approach to cognitive science could benefit from attention to the innovative research being done by feminist scientists, such as Gillian Einstein (2012) and Anne Fausto-Sterling (2016), through the use of pluralistic methodologies. Using Einstein's *situated neuroscience* as an example, my commentary will lend support to two lines of thought in Gallagher's paper: that there are irreducible aspects of lived experience through which our relations with the world take on significance particular to subjects (both practitioner and subject of study), and that taking these aspects into account can lead us to develop more fruitful scientific practices.

So as to avoid any ambiguities, it is important to clarify in what sense it is that irreducibility is being used. While Gallagher states that he is focused on issues with Nagelian, or intertheoretic reduction, McGivern (2019) points out that there are other senses of reduction that could also be important in calling for a non-classical conception of nature, such as reductions to causal mechanisms and functional roles. Gallagher seems unlikely to object to this, as his point is not to claim that subjectivity is *only* intertheoretically irreducible (or that any kinds of irreducibility are mutually exclusive). Gallagher's main target, though, is not reductionism, but a scientific naturalism that demands reductionist methods and explanations. While subjectivity may be irreducible on his account, this only serves to scaffold his argument that subjectivity ought to be centralized in our re-conception of nature, naturalism, and science.

Rather than focus on the irreducibility of subjectivity in general, I will be concerned with the importance of the incorporation of subjectivity in scientific methodologies and practices. I will use as an example Gillian Einstein's (2012) triangulation of methods (first-person, third-

person, and physiological) in studying the effects of female genital cutting (FGC) on the central nervous system of a specifically situated sociocultural group (Somali-Canadians). Einstein's approach, dubbed *situated neuroscience*, demonstrates how attending to data gained through multiple methods helps in better understanding the data from each, and that the reciprocities between the domains of study, as well as among subjects and scientists themselves, should be part of a complete scientific explanation. Her study design thus takes into consideration the situation of the scientist, as part of the study herself, and the lived experiences and sociocultural situation of the subject(s).

In this particular project, Einstein (ibid.: 150) sought to better understand the effects of the traditional cultural practice of FGC, which, as she describes,

> in its most extreme examples requires excision of the clitoris (Clitoridectomy), cutting off the labia minora (Excision], cutting the labia majora (Excision), and suturing the labia majora together to make a small hole from which urine and menstrual blood can flow (Infibulation).

She hypothesized that the procedure caused lasting bodily effects, which, in turn, led to differences in the way that recipients experienced the world, in a way that could not be explained simply by looking at the central nervous system itself—the effects instantiated a lived, corporeal *embodiment* of their culture.

In the design stage, Einstein consulted with midwives and others in community healthcare to ensure the study was attending to the kinds of issues and features of experience important or meaningful to the involved group. Determining how best to collect first-person data involved looking at ways that using certain types of collection methods would encourage or hinder participants and the kinds of concepts considered appropriate or inappropriate to describe their experiences. As Einstein (2012: 154) says, 'the semi-structured version [of the interview]

did not allow women to tell their stories in a way that did justice to the stories themselves', so she chose to do away with questionnaires or shorter interviews to allow for a more narrative approach to gathering first-person qualitative data. As Einstein (ibid.:154) describes, 'Because pain is so culturally dependent, it became apparent that it was important to give the body a voice as well and to explore how different narratives about pain aligned'. Because the sociocultural meaning of the practice was taken seriously as influential in establishing and describing the effects on the embodied experience of the recipients, narratives provided a richer and deeper understanding of the impact of the procedure.

The third-person component involved a measuring of the subjects' pain threshold at four vulvular regions, or 'quantitative sensory testing', in a laboratory setting to determine how the pain appeared on a scale that could be compared to the pain thresholds of differently situated patients. The physiological component incorporated findings from the day-to-day lives of the study participants, including reports of their experiences during and before menses, difficulties lifting their children or walking during some times of the month, and so on. This data was then compared with reports given by Somali women in Diaspora, Finland, about pains particular to their population (Tiilikainen 2001).

Though it involved a third-person component, Einstein's (2012) methodology was certainly not reductive, but rather attended to the situatedness of both scientist and subjects through thoughtful and deliberate measures. Her *situated neuroscience* is a paradigm example of how the impact of feminist critiques of objectification has led to richer scientific practices. First, Einstein (ibid.: 168) says,

> [I] tried to redress a wrong born of a Cartesian vision of the body comprised of separable parts. I questioned whether the Cartesian model of the separation of body and mind, which

> undergirds modern biomedicine, is in fact an adequate place to start in describing the biologies of women.

Recall that Gallagher (2019: XXX), similarly, states that 'a reductionist program is possible only on an understanding of nature as a *partes-extra-partes* objective totality, which, along with Merleau-Ponty, we should reject.' While Einstein's (2012) study purports to focus on the 'brains' of participants rather than reducing the effects of FGC to subjects' bodies, it did incorporate some aspects amenable to more enactive and embodied approaches to cognitive science. The interplay between personal narratives, social meaning, and the lived body was taken seriously throughout. For example, it was important to note that women who had the procedure felt that it made them more beautiful, more desirable, and that it gave them more social capital, which is important when looking at how the procedure effects how one carries herself and interacts within a social environment. Through an enactivist lens, one could use the data gleaned from the study to discuss the way that embodying culture makes more salient certain environmental and social affordances (Chemero 2009, Rietveld and Kiverstein 2014). As Gallagher (2018: XXX) explains it,

> the function of an object is never just purely the function of an object-in-general; what matters are the affordances that an object offers to a particular agent. Accordingly, the object is never neutral, and . . . behaviour simply cannot be reduced to differences in brain function alone, ignoring the details of body and world.

Second, Einstein's (2012) study involved a mindful situating of herself as researcher,

> thereby recovering for scrutiny in the results of research the entire research process. That is, the class, race, culture and gender assumptions, beliefs and behaviors of the researcher her/himself must be placed within the frame of the picture that she/he paints (Harding 1987: 29, cited in Einstein 2012: 168).

Stemming from a rejection of a fact/value distinction, situating oneself brings to the forefront of a study the sociocultural influences on the types of valuations the scientist brings into data collection and interpretation. Another insight from feminist theory that can be seen in Einstein's study is the importance of viewing knowledge production processes as a collective, not individual, endeavour.

Third, Einstein (ibid.) makes it clear that none of the approaches used in the study, nor the information collected through a particular approach, should be treated as more valuable than another. It was imperative that 'one field (i.e., social science) is not subordinated or used in the service of the other (i.e., biological science) and especially, that one isn't privileged over the other' (ibid.: 157). This seems very much aligned with Gallagher's (2018: XXX) suggestion that rethinking the scientific conception of nature would involve 'a multidisciplinary approach that necessarily discounts every single discipline for the sake of the many; where neither neuroscience, nor psychology, nor phenomenology … gets the final say'.

Many feminist philosophers and scientists have been at ease with the kind of methodological naturalism that eschews a priori principles of objectification, hierarchical organization, and reductive explanations. As Einstein (2012: 147) says on the implications of her own approach, 'a new philosophy of science might allow each field and subfield to have their say, move in their own directions and dictate their own theory.' Her methodology seems to firmly reject any kind of theoretical hierarchy. The success of Einstein's methodology adds support to Gallagher's (2018: XXX) claim that 'to reduce the embodied agent to a set of computational-neuronal processes that can be analyzed in terms of physical reality or nature, [scientists] not only miss something important, they frame their explanations in the wrong way.' To reject a priori the role that the body, sociocultural situation, and personal history play for

understanding how gender and sex specific practices and norms shape experience would be to foreclose on a rich research avenue offering nuanced, multidimensional explanations. This becomes an ethical and political issue when we consider that the experiences and values of marginalized groups are often disregarded or treated as anomalous. To simply study or reduce explanations to neural mechanisms and biophysical structures thus doesn't just risk leaving out important details, but often fails to consider who decides which phenomena are important and how. Through the example of Einstein's practice of situated neuroscience, I hope to have shown that there are viable scientific methodologies that can incorporate enactive, embodied approaches with other scientific practices and critical theories in offering a feasible way forward in redefining how we approach scientific practices, phenomena of interest, and perhaps nature itself.

References

Chemero, A. 2009. *Radical Embodied Cognitive Science*, Cambridge, MA: MIT Press.

Einstein, G., 2012. Situated Neuroscience: Exploring Biologies of Diversity, in *Neurofeminism: Issues at the Intersection of Feminist Theory and Cognitive Science,* eds R. Bluhm, A. J. Jacobson, and H. L. Maibom, New York: Palgrave-Macmillan.

Fausto-Sterling, A. 2016. How Else Can We Study Sex Differences in Early Infancy?. *Developmental Psychobiology* 58/1: 5–16.

Fine, C., 2011. *Delusions of Gender: How Our Minds, Society, and Neurosexism Create Difference,* New York and London: W.W. Norton & Company.

Gallagher, Shaun. 2018. Rethinking Nature: Phenomenology and a Non-reductionist Cognitive Science, *Australasian Philosophical Review* 2/2: XXX–XXX.

Harding, S. G. 1991. *Whose Science? Whose Knowledge? Thinking from Women's Lives*, Ithaca, NY: Cornell University Press.

Longino, H. E. 1990. *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry*, Princeton, NJ: Princeton University Press.

McGivern, P. 2018. Gallagher on Non-reductive Naturalism: Complementarity, Integration or Multi-scale Science?, *Australasian Philosophical Review* 2/2: XXX–XXX.

Rietveld, E., and J. Kiverstein 2014. A Rich Landscape of Affordance, *Ecological Psychology* 26: 325–52.

Tiilikainen, M. 2014. Suffering and Symptoms: Aspects of Everyday Life of Somali Refugee Women, in *Variations on the Theme of Somaliness*, ed. M. S. Lilius, Turku, Finland: Centre for Continuing Education: 309–17.